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Forest Insect & Disease Management

Survey Report

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SPRUCE BUDWORM DEFOLIATION AND EGG MASS SURVEYS,

OTTAWA NATIONAL FOREST, MICHIGAN 1976

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INTRODUCTION

The spruce budworm has been a menace to spruce-fir stands in Upper Michigan for several years. Mortality, due to this pest, has been severe enough to cause changes in timber management plans and revisions in sale areas. On the Ottawa National Forest, surveys were conducted for defoliation and egg masses to define current damage areas and to forecast problem areas for 1977.

METHODS

The aerial defoliation survey was conducted in early July by Bruce Anderson, Forest Technician and Marion True, Timber Management Staff, using flight lines spaced at 6-mile intervals and sketch mapping techniques. Defoliation was mapped as follows:

<u>Intensity</u>	<u>Percent Defoliation</u>
Light	0-50%
Heavy	51-100%
Severe	No tree mortality Top kill and tree mortality

The egg mass survey was completed in late July after moth flight. This survey consisted of points (3 balsam fir) selected within or close to a sample of areas of each defoliation class recorded in the aerial survey. Three 15-inch branch samples were cut from the midcrown of each tree at each point. Branches were examined in the field for egg masses.

RESULTS

Aerially observed defoliation is shown on the attached map. The gross acreage mapped shows 31,160 acres with light defoliation, 126,440 acres heavy, 59,160 acres severe, or a total of 216,740 acres.

Table 1 lists the plot location and average number of egg masses per sample branch for each plot. The predicted 1977 defoliation is based on:

<u>Average No.</u> <u>egg masses/branch</u>	<u>Predicted</u> <u>defoliation level</u>	
0.0-0.3	light	0-25%
0.4-0.7	moderate	26-50%
0.8-1.4	heavy	51-75%
1.5+	severe	76+%

Slightly more than 33 percent of the egg masses found were parasitized, not enough to significantly effect the next generation.

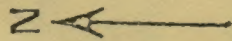
DISCUSSION

The aerial survey shows an increase in gross acreage for all defoliation classes of 145 percent from 1975 to 1976 (149,280 acres vs. 216,740 acres). The major portion of the increase is in the heavy defoliation class which increased most from 72,960 acres in 1975 to 126,440 in 1976. This increase may result in more top kill and tree mortality next year.

The egg mass survey data show 11 of the 18 plots are predicted to have heavy to severe defoliation next year. No trend in egg mass population was determined because similar surveys have not been conducted on the Ottawa National Forest for several years.

As an aid in defusing future budworm outbreaks, the land manager should attempt to break up large even-age stands of fir into smaller stands by silvicultural action wherever possible.

OTTAWA NATIONAL FOREST



R44W

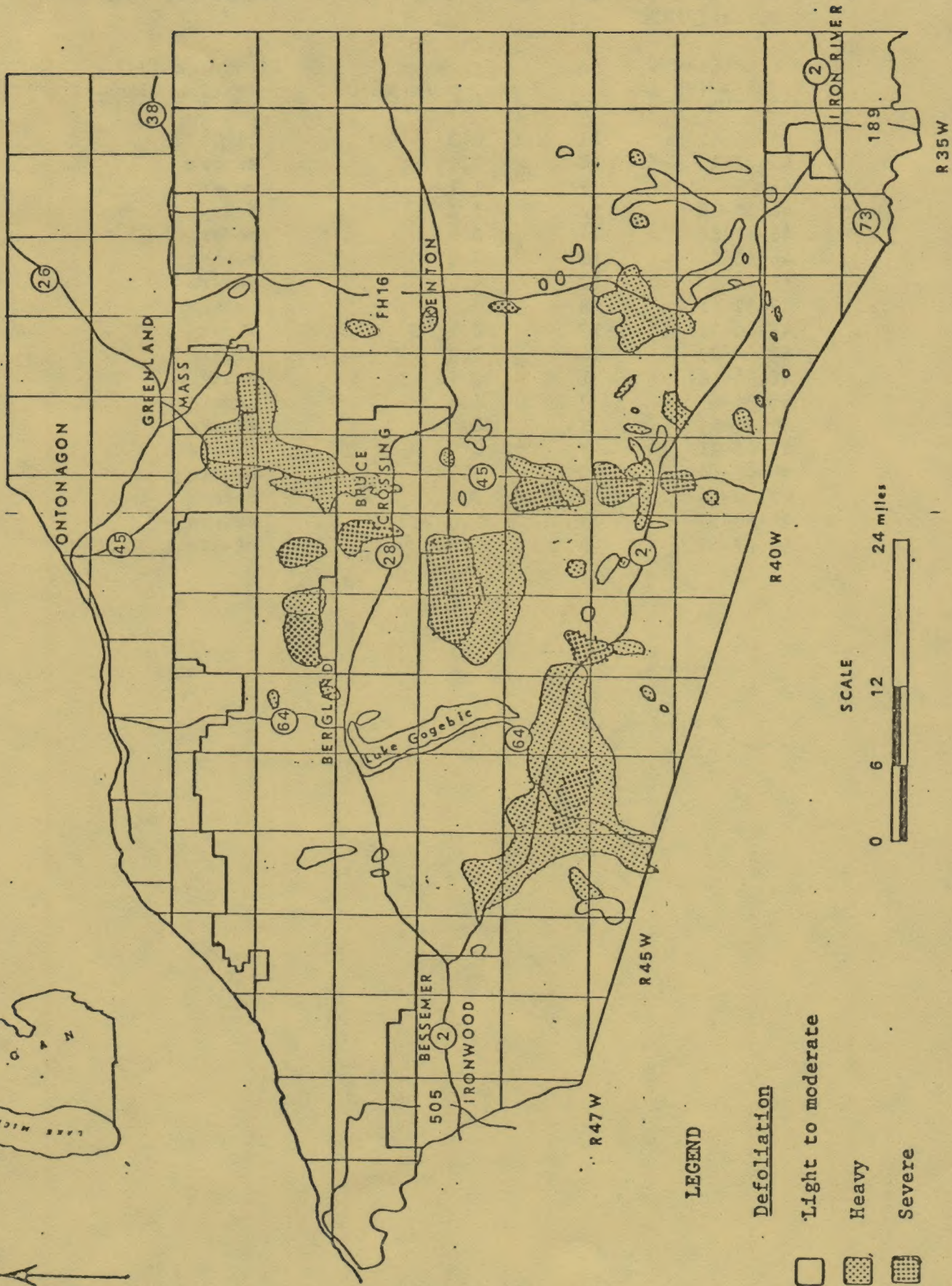
R40W

R35W

T50N

T45N

T42N



LEGEND

Defoliation



Light to moderate

Heavy

Severe

SCALE

0 6 12 24 miles

Spruce budworm defoliation on the Ottawa National Forest, Michigan - 1976

Table 1.--Summary of spruce budworm egg masses and predicted intensity of 1977 fir defoliation at sample plots. Ottawa National Forest, 1976.

<u>Plot Locations & T (N) R (W) S</u>	<u>No.</u>	<u>Egg Masses Ave. No/Branch</u>	<u>Predicted 1977 Defoliation Class</u>
44-35-6	10	0.3	light
45-37-13	11	2.4	severe
45-39-34	9	1.9	severe
46-39-18	12	1.2	heavy
46-42-23	14	0.6	moderate
46-43-4	15	4.3	severe
46-44-35	17	4.4	severe
47-37-11	8	0.6	moderate
47-40-31	13	0.1	light
47-44-29	16	0.0	light
48-44-16	1	0.9	heavy
48-34-4	7	1.6	severe
49-41-5	2a	2.4	severe
49-42-21	2	0.7	moderate
49-41-14	3	1.7	severe
49-39-16	4	0.4	moderate
49-40-35	5	1.6	severe
50-37-36	6	1.6	severe